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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

NGUYEN, DANNY

ART UNIT	PAPER NUMBER
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2836

DATE MAILED: 09/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/967,177

Applicant(s)

BERGH ET AL.

Examiner

Danny Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 June 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1, 11, 19, 29 have been considered but are moot in view of the new ground(s) of rejection.
2. Applicant's arguments with respect to claim 34 are not persuasive.

Regarding claim 34, applicant argued that Morron does not disclose the comparison of a control signal level to a threshold. However, Morron discloses the comparison of a control signal level (such as a control signal level outputted from the amplifier 51 is applied to the input of the comparator of circuit 15. This control signal is compared with the threshold value set by R2, see col. 3, lines 47-53). Therefore, applicant's arguments with respect to claim 34 do not distinguish over the Morron reference.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-6, 9-14, 17-20, 23-25, 27, 28 are rejected under 35 U.S.C. 102(b) as being anticipated by Engel et al (USPN 3,852,642).

Regarding claims 1, 3, Engel discloses control circuit for an electrical relay (e.g. see fig. 1 and 2), the circuit comprises a solid state switch (30) is coupled to a relay operator (20) to control energization of the relay operator; and a leakage current

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suppression circuit (e.g. 24) configured to be coupled electrically in parallel with the solid state to place the switch in a conducting state and thereby to energize the relay operator when a control signal current level is above a leakage current threshold, and to place the switch in a non-conducting state and thereby to de-energize the relay operator when the control signal level is below a leakage current threshold (e.g. col. 2, lines 61-67, col. 3, lines 50-60).

Regarding claims 2, 4, 23, Engel discloses the solid state switch (30) and the leakage current suppression circuit (24) are coupled to a DC bus (such as a DC node coupled between the rectifier D3 and switch 30), and the solid state switch is configured to be coupled in series with the relay operator.

Regarding claims 5, 6, 12, 13, 14, 24, 25, Engel discloses a signal conditioning circuit (C4) for smoothing the direct current control signal and limiting the voltage of the direct current control signals to desired level (D1 and D2).

Regarding claims 9, 10, 17, 18, 27, 28, Engel discloses the leakage current suppression circuit includes a pair of resistors in series (e.g. series resistors R7 and R8) about a node (e.g. 28), and wherein the leakage current suppression circuit is operative to place the solid state switch (Q1) in a conducting state when a voltage at the node is above a desired level (e.g. col. 2, lines 61-67, col. 3, lines 50-60).

Regarding claims 11, 19, 20, 23, Engel discloses a control circuit for an electrical relay (fig. 1 and 2), the circuit comprises a rectifier circuit (rectifier D3) for receiving AC control signals and for outputting DC control signals; a DC bus (such as DC bus coupled between D3 and switch 30) coupled to the rectifier circuit for receiving the DC

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control signals; a control signal conditioning circuit (e.g. D1 and D2) coupled to the DC bus for conditioning the DC control signals; a solid state switch (30) is coupled to a relay operator (20) to control energization of the relay operator; and a leakage current suppression circuit (e.g. 24) configured to be coupled electrically in parallel with the solid state to place the switch in a conducting state and thereby to energize the relay operator when a control signal current level is above a leakage current threshold, and to place the switch in a non-conducting state and thereby to de-energize the relay operator when the control signal level is below a leakage current threshold (e.g. col. 2, lines 61-67, col. 3, lines 50-60).

4. Claims 34, 37, are rejected under 35 U.S.C. 102(b) as being anticipated by Morron et al (USPN 6,025,980).

Regarding claim 34, Morron discloses a method for controlling a relay circuit, the method comprises controlling a conductive state of a solid state switch (Q1) in series with a relay coil (L1) such that the relay coil is energized if a current level of an input control signal is above a predetermined leakage current threshold level and is deenergized if the current level of the input control signal is below a predetermined leakage current threshold level (e.g. see fig. 1, 5 and 6, and col. 3, 4, lines 64-3 and lines 32-35).

Regarding claim 37, Morron discloses a converter (29) for converting AC input and smooth (C6 and C7) the DC signal.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 7, 8, 15, 16, 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Engel et al in view of Misencik (USPN 5,541,800). Engel discloses all limitations of claims 1, 11, 19 as discussed above, but does not teach a fault indicator as claimed. Misencik discloses a ground fault interrupt circuit comprises a LED indicator for indicating as a fault occurs (col. 2, lines 8-10). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the protection circuit of Engel with the LED indicator as taught by Misencik in order to provide indication that a leakage current error has occurred (e.g. col. 2, lines 57-60).

6. Claims 35 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morron in view of Engel et al.

Regarding claim 35, Morron discloses all limitations of claim 34 as discussed above, but does not disclose the leakage current detection as claimed. Engel discloses a protection circuit comprises a leakage current detection circuit (such as 24) is coupled in parallel with the solid switch (30) (see fig. 2). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the protection circuit of Morron to incorporate a leakage current detection circuit coupled in

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parallel with the solid switch as taught by Engel in order to provide a better protection (col. 1, lines 45-48).

Regarding claim 36, Morron discloses the voltage at the node (the output from the comparator 52) is applied to the solid switch (Q1).

7. Claims 29, 30, 32, 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gernhardt et al (USPN 5,864,455) in view of Engel. Gernhardt discloses terminal block relay assembly (such as fig. 1) comprises a terminal block including input terminals (26 and 28), output terminals (38 and 40), a bay (such recess 98) for receiving a relay (16), and connections (304 and 314) for routing signals between the terminals and the relay; a relay disposed in the bay and coupled to the connections, the relay having an operator (19); a circuit board (14) supported in the terminal block and coupled to the input terminals and to the relay operator via two of the connections (via conductors 30 and 36 and 42 and 44), but Gerhardt does not disclose the leakage current protection as claimed. Engel discloses a protection circuit (fig. 1 and 2) comprises a solid state switch (30) is coupled to a relay operator (20) to control energization of the relay operator; and a leakage current suppression circuit (e.g. 24) configured to be coupled electrically in parallel with the solid state to place the switch in a conducting state and thereby to energize the relay operator when a control signal current level is above a leakage current threshold, and to place the switch in a non-conducting state and thereby to de-energize the relay operator when the control signal

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level is below a leakage current threshold (e.g. col. 2, lines 61-67, col. 3, lines 50-60). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the protection circuit of Gerhardt to incorporate a leakage current detection circuit as taught by Engel in order to provide a better protection (col. 1, lines 45-48).

8. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gerhardt et al in view of Engel and Misencik (USPN 5,541,800). Gerhardt and Engel disclose all limitations of claim 29 as discussed above, but do not disclose a fault indicator as claimed. Misencik discloses a ground fault interrupt circuit comprises a LED indicator for (col. 2, lines 8-10). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the protection circuit of Gerhardt and Engel to incorporate the LED indicator as taught by Misencik in order to provide indication that a leakage current error has occurred (e.g. col. 2, lines 57-60).

9. Claim 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Engel in view of Gerhardt et al. Engel discloses all limitations of claim 19 as discussed above, but Engel does not disclose the relay and the switch are supported as claimed. Gerhardt discloses a leakage current protector (fig. 1 and fig. 10) comprises the relay (16) and the switch (e.g. 232) are supported on the circuit board (14) and on a terminal block (e.g. terminal block shown in fig. 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the elements of

protection circuit of Engel to incorporate the relay and the switch are supported on the circuit board as taught by Gerhardt in order prevent components from being damage.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Danny Nguyen whose telephone number is (571)-272-2054. The examiner can normally be reached on Mon to Fri 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on (571)-272-2058. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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8/26/2004



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